4.3.4 IMMOBILIZATION ALTERNATIVE CATEGORY

These sections describe three immobilization alternatives for the final disposition of Pu: Vitrification Alternative, Ceramic Immobilization Alternative, and Electrometallurgical Treatment Alternative (GBZ). The representative sites are: Hanford, NTS, INEL, Pantex, ORR, and SRS. The sections describe the construction and annual operational impacts of the immobilization alternative facilities on the following potentially affected areas: land resources, site infrastructure, air quality and noise, water resources, geology and soils, biological resources, cultural and paleontological resources, socioeconomic, public and occupational health and safety, and waste management. The impacts for all of the alternatives in these sections are in addition to those associated with the pit disassembly/conversion facility (Section 4.3.1) and the Pu conversion facility (Section 4.3.2). The potential can-in-canister approach at SRS for either vitrification or ceramic immobilization has been described in Appendix O. Should either of these variants be selected, follow-on tiered NEPA documentation will be completed, as appropriate.

4.3.4.1 Vitrification Alternative

The environmental impacts described in the following sections are based on the analysis of a new vitrification facility described in Section 2.4.4.1. The representative sites used for this facility are: Hanford, NTS, INEL, Pantex, ORR, and SRS.

In accordance with the Preferred Alternative for surplus Pu disposition, the vitrification facility could be located at either Hanford or SRS. Further tiered NEPA review will be conducted to examine alternative locations, including new and existing facilities at these two sites, should the Preferred Alternative be selected at the ROD.

For the Vitrification Alternative, the analysis in Sections 4.3.4.1.1 to 4.3.4.1.10 assumes that a new facility would be built. However, there are several potential variations described in Table 2.4–1, some of which could potentially use existing facilities for portions of the operations. For example, under the can-in-canister approach, the existing DWPF at SRS could be used to provide vitrified glass for the outer canister which surrounds the inner can of vitrified Pu.

4.3.4.1.1 *Land Resources*

A new facility for the Vitrification Alternative would disturb 24 ha (60 acres) of land during construction, of which 12 ha (30 acres) would be used during operations. The need for buffer zones would be determined during site-specific, tiered NEPA documentation. Land use would be less if existing facilities were used for portions of the vitrification operation.

Construction and operation of the vitrification facility would not cause indirect land use impacts at the analysis sites. As discussed in Section 4.3.4.1.8, in-migration of workers should be required only during the operational phase. However, it is expected that housing construction should be sufficient to absorb the increase in population at each site. Therefore, offsite land use at the analysis sites would not be affected. Direct and indirect impacts to land resources during construction and operation are described by representative site.

Hanford Site

Land Use. The vitrification facility site would utilize vacant land in the 200 Areas adjacent to 200 East. Construction would be in conformance with existing and future land use as described in the *Hanford Site Development Plan* and with ongoing discussions in the Comprehensive Land Use Planning Process (HF DOE 1993c:13,14). According to the current *Hanford Site Development Plan*, 200 Area's land use is identified as waste operations which includes radioactive material management, processing, and storage. [Text deleted.]

Construction and operation would not affect other Hanford or offsite land uses. No prime farmlands exist onsite. Construction of the vitrification alternative would be consistent with State and local (Benton, Franklin, and Grant counties and the City of Richland) land use plans, policies, and controls since Hanford provides information to these jurisdictions for use in their efforts to comply with the GMA (HF DOE 1993c:17).

Visual Resources. [Text deleted.] Construction and operation would be consistent with the industrialized landscape character of the 200 Areas and current VRM Class 5 designation. A potential visual impact during operation would be from stack plumes which would be visible from public viewpoints with high sensitivity levels including State Highways 24 and 240 and the City of Richland; however, because of the viewing distance and compatibility of the proposal with existing industrial character, visual impacts would not occur.

Nevada Test Site

Land Use. The potential location for the vitrification alternative would be on undeveloped land in Area 6 adjacent to the DAF. Construction and operation of the facility in Area 6 would not be in conformance with the current *Nevada Test Site Development Plan*, which designates the southeast area of NTS as a nonnuclear test area. [Text deleted.] However, Area 6 is a potential site for long-term storage and disposition of weapons-usable fissile materials as part of the NTS defense program material disposition activities considered under the Expanded Use Alternative (part of the Preferred Alternative) of the NTS EIS (NT DOE 1996c:3-8,3-9; NT DOE 1996e:A-18). [Text deleted.]

Construction and operation would not affect other NTS or offsite land uses. No prime farmlands exist onsite. The alternative would not be in conflict with land-use plans policies, or controls of adjacent jurisdictions since none of these counties or municipalities currently undertake land-use planning.

Visual Resources. [Text deleted.] Construction and operation of the facility would be compatible with the industrial landscape character of the adjacent DAF and the current VRM Class 5 designation of Area 6. Views of the proposed action would be blocked form sensitive viewpoints accessible to the public by mountainous terrain.

Idaho National Engineering Laboratory

Land Use. A new vitrification facility would be located on undeveloped land in the ICPP security area, which is situated within the central core area/Prime Development Land Zone of INEL (IN DOE 1992g:12). Construction and operation of the facility would be consistent with the current *Idaho National Engineering Laboratory Site Development Plan*, which designates the future land use of the ICPP as receiving and storing spent nuclear fuels and radioactive wastes (IN DOE 1994d:9-8). [Text deleted.]

Construction would not affect other INEL or offsite land uses. No prime farmlands exist onsite. Construction would not be in conflict with land-use plans, policies, and controls of adjacent counties and the city of Idaho Falls since they do not address the potential site.

Visual Resources. [Text deleted.] Construction and operation would be compatible with the present visual character of INEL, which consists of large industrial facilities and stack plumes. Potential visual impacts could occur during operation during operation from additional stack plumes; however, the proposal would be consistent with the existing Class 5 industrial landscape character of the ICPP.

Pantex Plant

Land Use. The vitrification facility would be located on undeveloped land in Zone 4. The potential action would be inconsistent with the current *Pantex Site Development Plan* which designates Zone 4 for weapons and

weapon components staging (PX DOE 1995g:16). However, Pantex could revise the site development plan should Pantex be selected for this alternative.

Construction would not affect other site land uses. There would be no onsite impacts to prime farmland. The alternative would not be in conflict with the city of Amarillo's land-use plans, policies, and controls since they do not address Pantex.

Visual Resources. [Text deleted.] Construction and operation of the vitrification alternative would be consistent with the industrialized landscape character. The current VRM Class 5 designation of Zone 4 would not change.

Oak Ridge Reservation

Land Use. A new vitrification facility would be located on undeveloped land at the northwest quadrant of the Route 95/Bear Creek Road intersection. The alternative would be in conformance with the future land use plan of the current *Oak Ridge Reservation Site Development and Facilities Utilization Plan* designates a portion of the site as a major waste management area (OR DOE 1991f:1-7). [Text deleted.]

Construction and operation would be compatible with ORR or offsite land uses. No prime farmlands exist onsite. The vitrification facility would not be in conflict with City of Oak Ridge land-use plans, policies, and controls since the current *Oak Ridge Area Land-Use Plan* designates the potential site for Industrial and Public land use.

Visual Resources. [Text deleted.] Construction and operation of the facility would change the current VRM Class 4 designation of the Bear Creek Road/Route 95 site to Class 5. Additionally, potential visual impacts could occur during operation from the new stack plumes. Construction and operation activities would be highly visible from Bear Creek Road and Route 95, public roadways with high sensitivity levels.

Savannah River Site

Land Use. A new vitrification facility would be located on undeveloped land in the F-Area. Facility construction and operation would conform with existing and future land use as designated by the current *Savannah River Site Development Plan.* According to the plan, current F-Area land use is designated industrial operations, while the future land use category is Primary Industrial Mission. Specifically, the F-Area is one of four SRS waste management facilities (SR DOE 1994d:11,12). [Text deleted.]

Construction and operation would not affect other SRS or offsite land uses. There is no prime farmland on SRS. Construction would not be in conflict with land-use plans, policies, and controls of adjacent counties and cities since they do not address SRS.

Visual Resources. [Text deleted.] Construction and operation would occur within an area of similar industrial landscape character. Potential visual impacts could occur during operation from additional stack plumes; however, the proposal would be consistent with the VRM Class 5 designation of the F-Area.

[Text deleted.]